



# Greater London Authority's School Air Quality Forum Event

Greater London Authority  
22<sup>nd</sup> March 2019

# Welcomes & Introduction

# Mayor's School Air Quality Audit Programme and Funding Update

### **Mayors Air Quality Schools Audit Programme Overview**

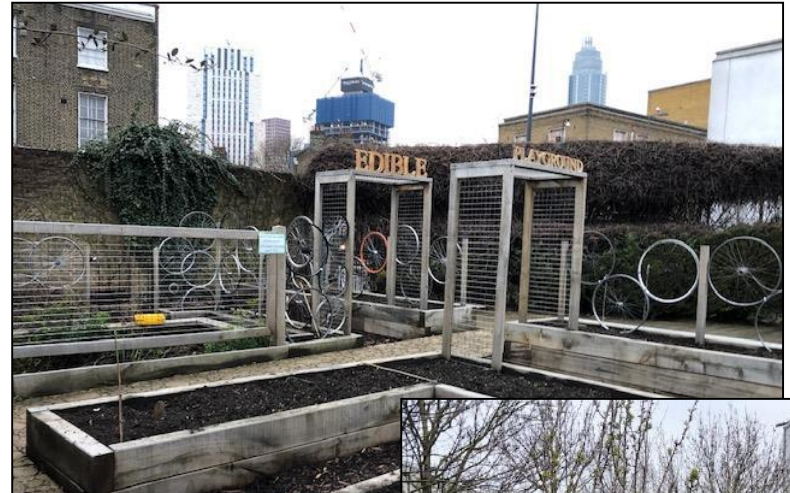
- The Mayor announced in May 2019, that the GLA would award 10k starter grants funding to the 50 participating schools that were audited, in support of the implementation of the audit recommendations
- Thus far the response has been very positive.



## Mayor's School Air Quality Audit Programme and Funding Update

### Schools:

- All Schools who are participating in the programme have received or are in the process of receiving their starter grant funding.
- Currently 45 Schools have completed their Implementation Plans.
- Analysis of the Project/ Implementation Plans indicates that the most popular measures are:
  - Green Infrastructure (73%)
  - Air Filtration (22%)
  - Cycle and Scooter Parking Measures (16%)
  - Boiler and heat loss measures (10%)
  - Indoor planting (10%)





## Mayor's School Air Quality Audit Programme and Funding Update

### Next Steps

- Post March the GLA will start gathering evidence and putting together an impact analysis on the measures implemented by each School.
- We can then share these updates and case studies with the Schools and Boroughs via the digital platform.
- Please feel free to send myself any case studies or information relating to the progress of your implemented measures.



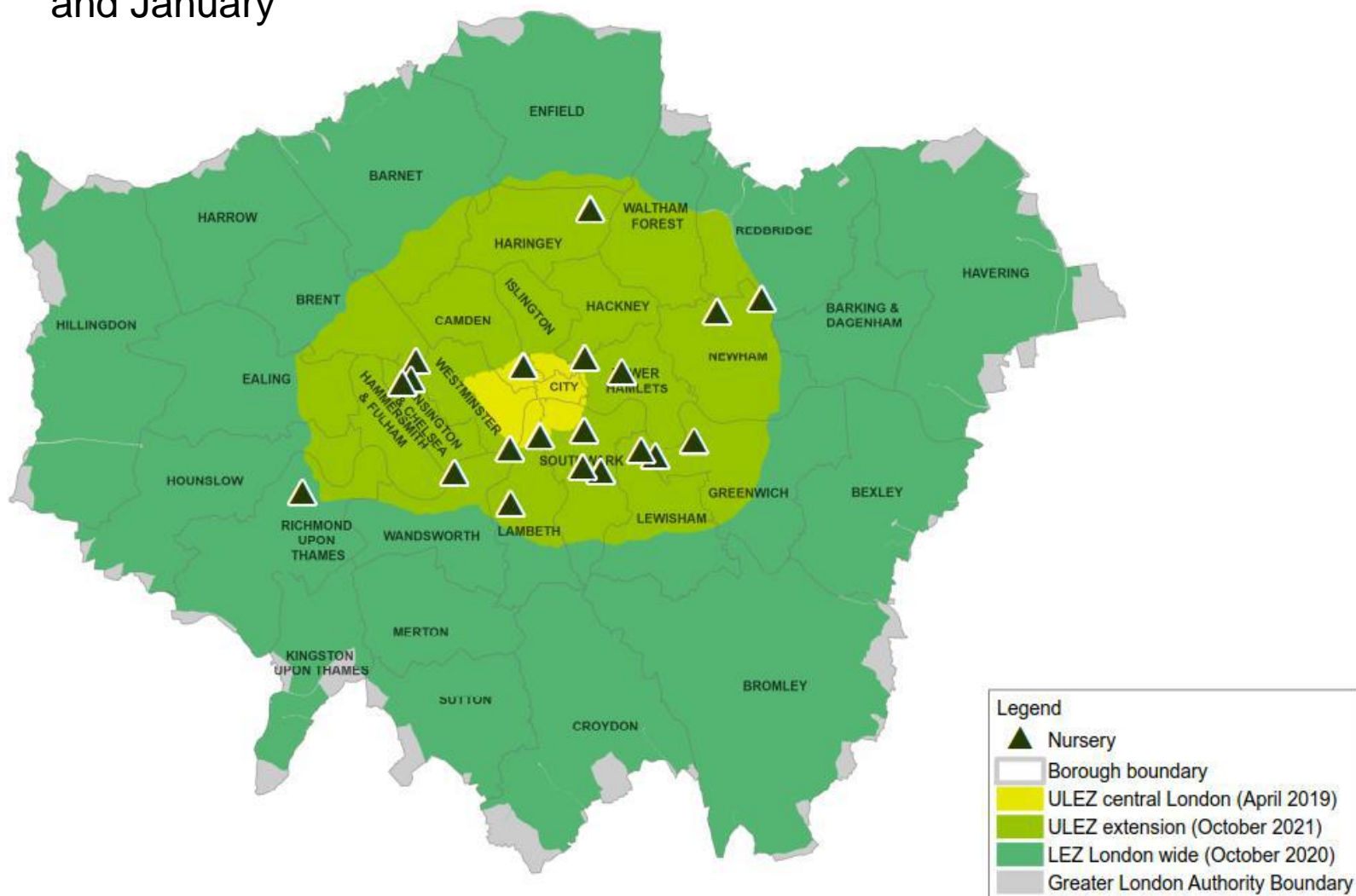
# Mayor's Nursery Air Quality Audit Programme Update

*Matt Croucher, WSP*



# Mayor's Nurseries Air Quality Audit Programme Update

- Air Quality Audits completed for 20 nurseries between December and January



# Mayor's Nurseries Air Quality Audit Programme Update

- Follows methodology developed for the primary school air quality audits, including:
  - Desktop study highlighting local sources of pollution etc.
  - Air quality modelling
  - A site visit and audit of the nursery building, grounds and surrounding area
  - Stakeholder discussions
  - Developing recommendations
- Additional elements:
  - Broader scope (PM<sub>10</sub>, PM<sub>2.5</sub> and VOC)
  - Greater focus on indoor air quality
  - Baseline air quality monitoring undertaken
  - Grant funding process incorporated into project
  - Air Filtration System Trials

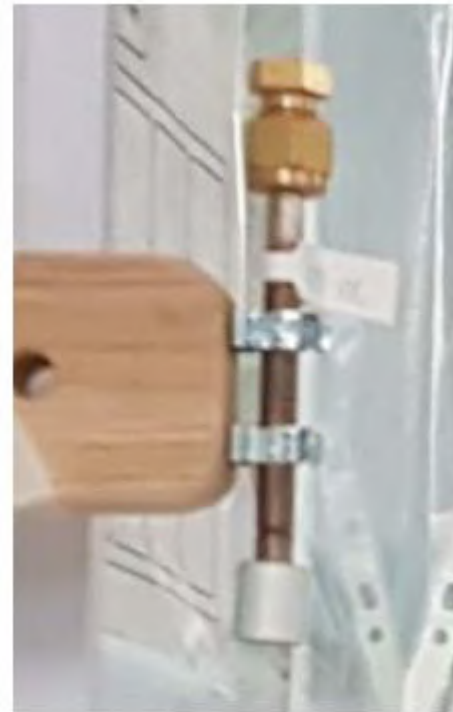


# Mayor's Nurseries Air Quality Audit Programme Update

- Air quality baseline monitoring currently underway (3 months)
- Final set of data due from laboratory late April



**Nitrogen  
Dioxide Tube**



**VOC Tube**



**Formaldehyde  
Sampler**

# Air Filtration System Trials

- 6 month trial of AFS
- Aim is to understand their effectiveness at reducing key air pollutants ( $\text{NO}_2$ ), and particulate matter ( $\text{PM}_{10}$  and  $\text{PM}_{2.5}$ )
  - in “**real world**” nursery environments
- $\text{NO}_2$  will be monitored throughout using diffusion tubes
- Plus Continuous indicative monitor (a Zephyr) and Particulate monitoring device (Sidepak) for two week period.
- Report on overall effectiveness, plus wider impacts, such as:
  - Noise
  - Cost
  - Observations by nursery staff



# Air Filtration System Trials

- What should be considered when selecting an air filtration systems?
  - Filtration/removal technology
  - Efficiency
  - Capex (capital expenditure)
  - Maintenance
  - Health & Safety
  - Operation (including energy consumption)
- AFS suppliers were shortlisted and invited to participate
- 6 nurseries were selected based on the findings of the air quality audits and baseline monitoring
- Trial due to commence in Early April 2019



# Next Steps

## AFS Trial

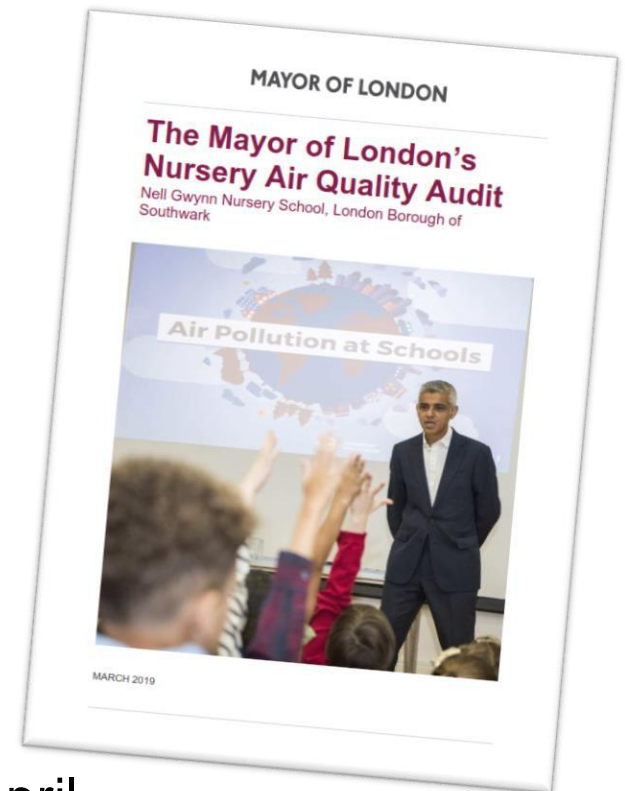
- 6 months Trials commence
- Monitoring undertaken
- Results published Late September

## Air Quality Audits

- Baseline Air Quality Monitoring at Nurseries completes in April
- Nursery Audit Reports published in April

## Funding and Delivery of Measures

- Follow up meetings with Nurseries/ Boroughs to administer Starter Grant Funding from April





**MAYOR OF LONDON**

# **Central London Ultra-Low Emission Zone**

Haley Bowcock, Air Quality Team  
22 March 2019



**MAYOR OF LONDON**

---

**Why are we doing this?**



## Why are we doing this?



### London's toxic air is a health crisis

- Thousands of Londoners are dying early every year as a result of toxic air
- It is stunting the growth of children's lungs, is a cause of cancer and increases the risk of asthma, stroke, type 2 diabetes and dementia
- People in London's most deprived areas are more likely to suffer from poor air quality... yet are least likely to own a car
- Children amongst the most vulnerable... yet over 400 schools in areas exceeding legal air quality limits
- The main reason London's air is so dirty is because of motor vehicles, with 40% of air pollution coming from diesel vehicles
- **The Ultra Low Emission Zone is part of a package of bold action the Mayor is taking to address this health crisis**



**New double decks will be hybrid, hydrogen or electric from 2018; new single decks will be zero exhaust emission from 2020**

**Target: Zero emission bus fleet by 2037 *at the latest***

***Currently over 165 zero emission buses in the fleet (155 pure electric and 10 fuel cell)***

***Over 62% of the total fleet meets Euro VI standard***





# LOW EMISSION BUS ZONES



**Current delivery:**  
*Seven of 12 complete. Next expected to be Edmonton - Seven Sisters this spring. All to be done by end of the year.*

**The first LEBZ along Putney High Street has reduced the number of hours breaching legal limits by more than 90 per cent (vs 2016).**







No more diesel taxis from 2018 and new taxis will need to be zero emission capable

Target: Zero emission capable taxi fleet by 2033 *at the latest*

1000+ electric taxis on the streets and growing every week



## What is the Central London ULEZ?

1. Central London ULEZ starts 8 April 2019
2. It will operate in the existing central London Congestion Charge Zone
3. It will operate 24 hours a day, every day of the year
- 4a. Vehicles must meet strict emission standards to drive in the ULEZ area.....
  - Euro 4 for petrol cars and vans (more than 14 years old in 2019)
  - Euro 6 for diesel cars and vans (more than four years old in 2019)
  - Euro 3 for motorcycles etc
  - Euro VI for lorries, buses and coaches
- 4b. Or pay a charge
  - £12.50 per day for cars, motorcycles and vans
  - £100 per day for lorries, buses/coaches
5. It replaces the T-Charge in central London, and is in addition to the Congestion Charge

The Mayor has announced **£48million scrappage support** for microbusinesses, charities and low income Londoners





# MAYOR OF LONDON

## Where and when does it operate?

**Operating 24/7**

**ULEZ Central  
London from  
8 April 2019**

in the same area as  
the Congestion Charge

**ULEZ extension  
to Inner London  
from 25 Oct 2021**

up to North & South Circular  
roads, including existing  
central London zone  
(all vehicles)



**LEZ London Wide  
from 26 Oct 2020**

(lorries and other  
vehicles over 3.5T)



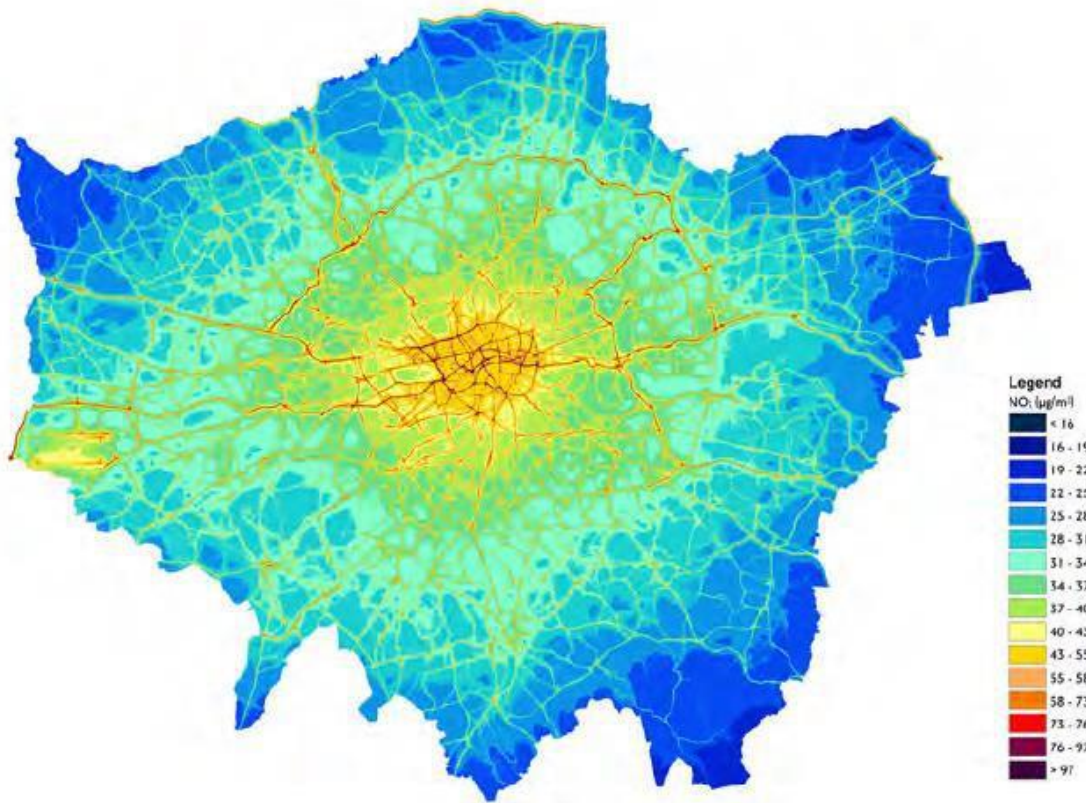
**Greater London Authority  
Boundary**



For a full list of affected vehicles see [tfl.gov.uk/ulez](https://tfl.gov.uk/ulez)

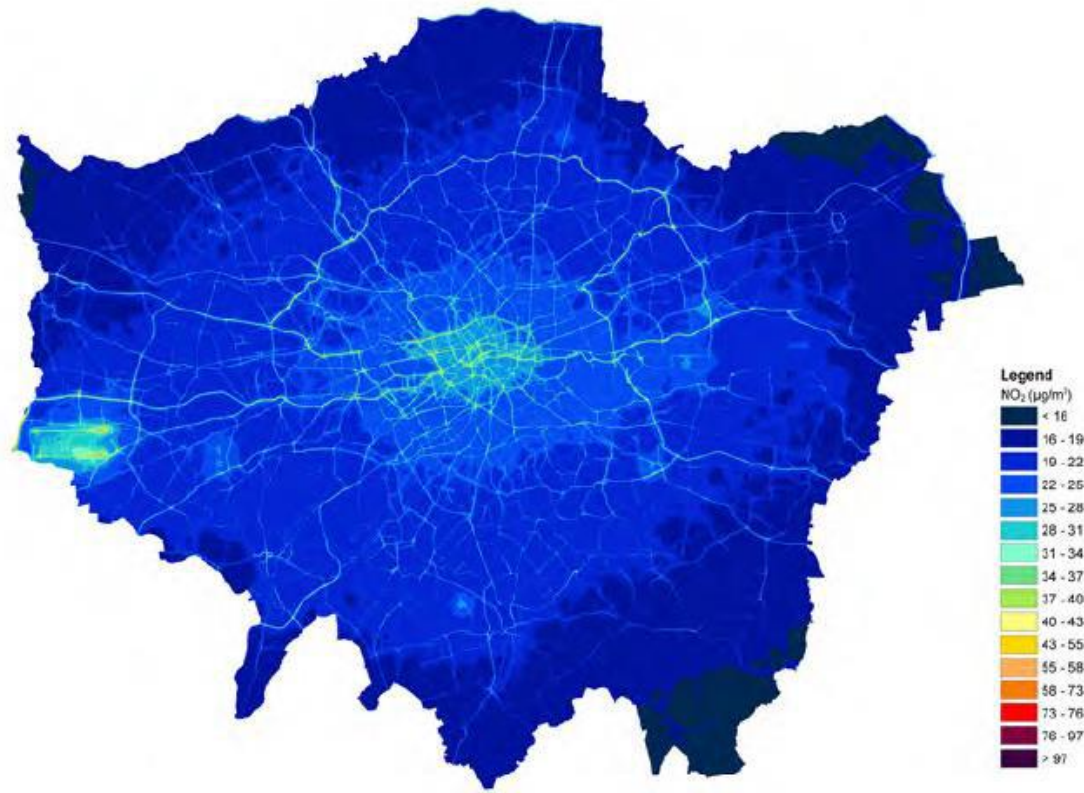


## What is air quality like now?



- **Over 400 primary and secondary schools** in areas that exceed legal air quality limits
- In 2013, 90-100% of major roads in inner and central London (and 49% in outer London) exceeding NO<sub>2</sub> limit values
- People living in the capital's most deprived areas are, on average, exposed to about a quarter more NO<sub>2</sub> pollution

## What will it achieve by 2025?



With all air quality package measures implemented:

- **No primary or secondary schools** in areas that exceed legal air quality limits
- Only 2% of road kms in London expected to exceed NO<sub>2</sub> limit values
- Gap in air quality between high and low income areas of London reduced by 71%.

## **How can you help?**

- Help raise awareness amongst colleagues and parents to the need for the ULEZ and how it will work
  - See more information about the scheme – including a vehicle checker – at TfL's website: [www.tfl.gov.uk/ulez](http://www.tfl.gov.uk/ulez)
  - See more information about what the Mayor's doing to clean up London's air at: [www.london.gov.uk/letlondonbreathe](http://www.london.gov.uk/letlondonbreathe)
- Support calls on central Government for a national vehicle scrappage fund

**MAYOR OF LONDON**

**Questions?**





# GROUNDWORK

CHANGING PLACES CHANGING LIVES





# AIR QUALITY GREEN INFRASTRUCTURE

A TOOLKIT FOR SCHOOLS





## GREENING BENEFITS

- Direct barrier to source of emissions
- Cognitive & academic performance
- Physical health benefits from outdoor exercise can outweigh risks
- Behaviour change







## OUTDOOR CLASSROOMS

- Planting, shelter and access
- Multiple uses and benefits
- Wider community engagement
- High cost & maintenance





## GREEN GATEWAYS

- Increased public awareness
- Encourages active travel
- Clean air walking routes
- Improves indoor environment
- Hard to move school entrances
- Land ownership issues





## » TREES AND HEDGES

- Capture pollution and reduce urban heat island effect
- Losing more trees than we plant
- Multiple ecosystem services
- Location is important
- Potential allergen sources







## GREEN SCREENS

- Capture localized emissions
- Can be used in planters on in ground
- Requires automatic irrigation
- Expensive for instant impact
- Limited wider benefits



### ELEPHANT'S EARS

*Bergenia spp.*



Large leathery leaves which can turn purple in winter, pink flowers

**Flowering:** March - April

**Height:** 0.1-0.5m



### LESSER CALAMINT

*Calamintha nepeta*



Aromatic grey hairy leaves with tiny clusters of white/blue flowers

**Flowering:** June - August

**Height:** 0.3-0.6m



### BELLFLOWER

*Campanula spp.*



Tall spikes of bell shaped flowers in blue, white and pink

**Flowering:** June - August

**Height:** 0.5-1.2m



### RED VALERIAN

*Centranthus ruber*



Long blooming season with red, pink or white flowers. Self seeds

**Flowering:** July - October

**Height:** 0.4-0.8m



### PERIWINKLE

*Vinca minor / major*



Dense low groundcover with small leaves and white/purple flowers

**Flowering:** April - September

**Height:** 0.1m



### CULVER'S ROOT

*Veronicastrum virginicum*



Tall narrow spires of small white or purple flowers in summer

**Flowering:** July - September

**Height:** 1- 2m



### TICKSEED

*Coreopsis verticillata*



Compact perennial with thin leaves and lemon yellow daisy-like flowers

**Flowering:** July - September

**Height:** 0.1-0.5m



### GLOBE THISTLE

*Echinops ritro 'Veitch's Blue'*



Round blue flowers attract lots of insects. Make good dried flowers.

**Flowering:** August

**Height:** 0.6-0.9m







Diocese of Southwark

# St Mary's Catholic Nursery and Infants' Schools

School Enquiries  
020 8647 5711

London Borough  
of Sutton

Head Teacher Mrs Christine Smith B.Ed Hons, NPQH

Office →



FOR MORE  
INFORMATION

Contact Fiona Brenner at:  
[londonairquality@groundwork.org.uk](mailto:londonairquality@groundwork.org.uk)

**Groundwork London**

# Case Studies



**LORDSHIP LANE**  
PRIMARY SCHOOL

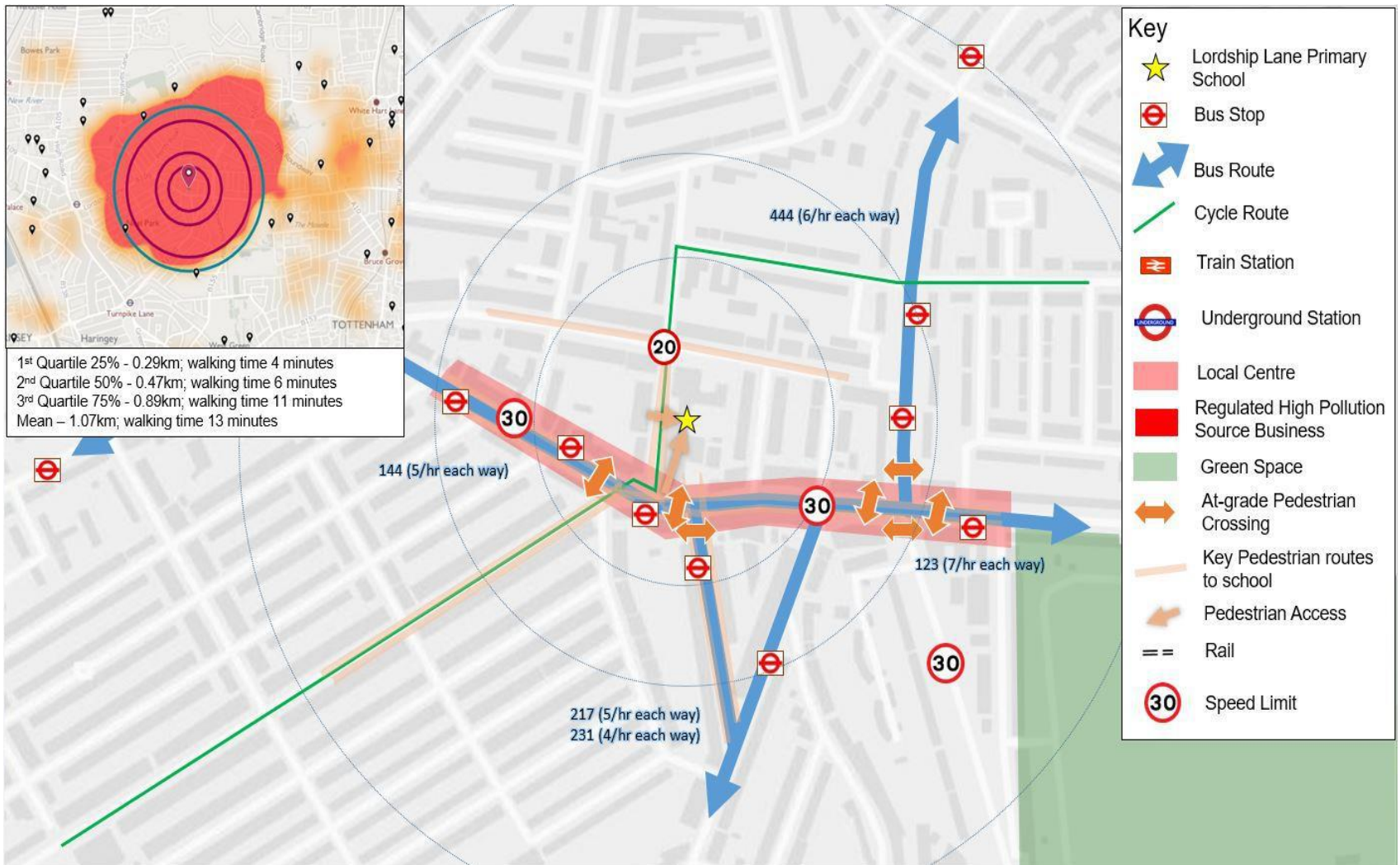
Linda Mouzouros-Business Manager  
Debbie Golding STA Champion

# Background

- Lordship Lane School is in Haringey North London.
- It is a three form entry school with over 600 pupils.
- It is situated in a highly polluted area and was identified by 'The Mayor's Air Quality' team as being one of 50 worst polluted schools in London.



# Pollution Zone



# Audit

The school took part in the 'Air Quality' audit and these were the recommendations-

- Replace old boiler
- Replace Kitchen outlet flue pipe
- Reduce localised traffic in roads adjacent to school
- Improve air quality within school grounds

# The following changes were made-

- Bollards are now functional at the junction of Ellenborough/Granville Roads closing the roads to traffic at peak times thus reducing localised pollution from idling vehicles and creating a safe place for children/families to access school.
- KS2 Children can enter the school grounds earlier (8:40) to avoid fumes from Lordship Lane traffic.
- Dyson have loaned air filters to monitor air pollution for EYFS who play outside for most of the school day.
- Friends of the Earth are analysing air samples from within the rest of the school.
- The boiler is being replaced using LA funding this summer. (2019)

# Changes made using funding

- The Mayor's Air Quality funding of £10,000 has been used to;
- Replace the extraction flue above the kitchen area to improve air quality at a cost of £2,500.
- The remaining funds (£7,500) have been used to design a quiet garden area with oxygen rich plants for the whole school to access and benefit from.



# What next?



- In December we were awarded 'School of London North Region' for our work and commitment to improving air quality for our school.
- Channel 4 'Dispatches' have shown a keen interest in our school and wish to film our 'clean air journey'-we are currently working with them on filming and with Kings College University to conduct an experiment with our asthmatic children and an additional 50 pupils/members of staff using individual monitors.



# Continuing measures



- Children in KS1 take home 'Hari Bear' and use a diary to record their journey to/from school.
- Children are encouraged to cycle/scoot to school-there are regular assemblies and 'Cycle confidence' teams come in to train children.
- Promotion of walking to school using '10 minute Walk Zone' maps.



# Charlotte Sharman - Air Quality Audit

Air Quality Grant Spending



# November 2017



MAYOR OF LONDON

## The Mayor of London's School Air Quality Audit Programme

Charlotte Sharman Primary School, London Borough of  
Southwark





Borough: Southwark

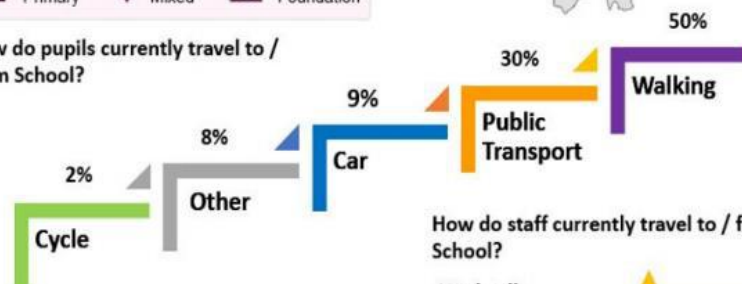
Address: West Square, London, SE11 4SN

Pupil Numbers: 350 Approximately



Age Primary  
Gender Mixed  
Type Foundation

How do pupils currently travel to / from School?



What is the catchment area for the school and how long would it take for pupils to walk to / from the School?



How do staff currently travel to / from the School?

8% of staff stated that they cycle and 6% use private car.

10% said they use other category (Car Share, Park and Stride)

17% of staff said they walk.

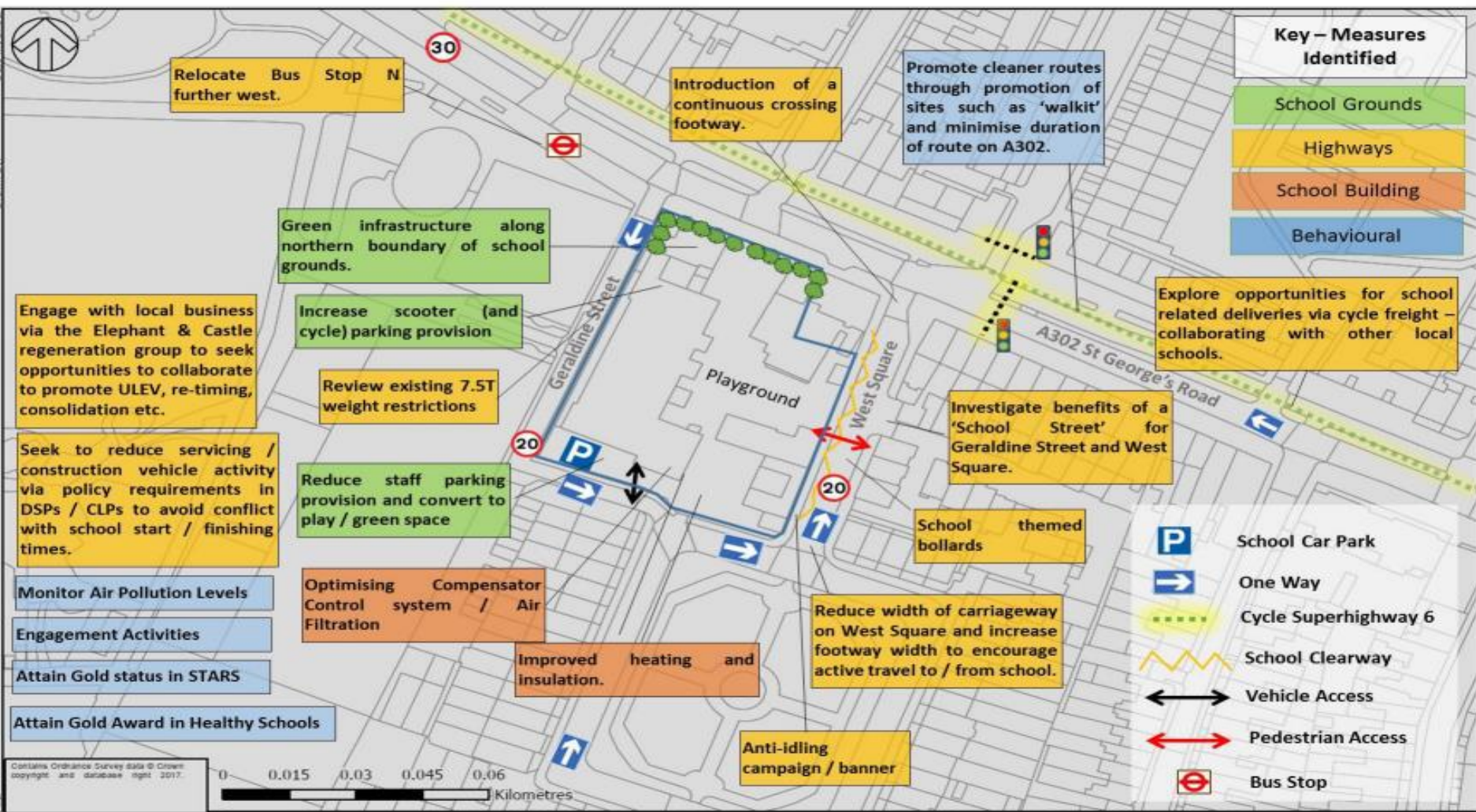
58% of staff said they use public transport.

The map to the left confirms that half of the pupils can travel to / from school within a 10 minute walk, and 75% within a 23 minute walk. The average walking time for pupils is 19minutes.



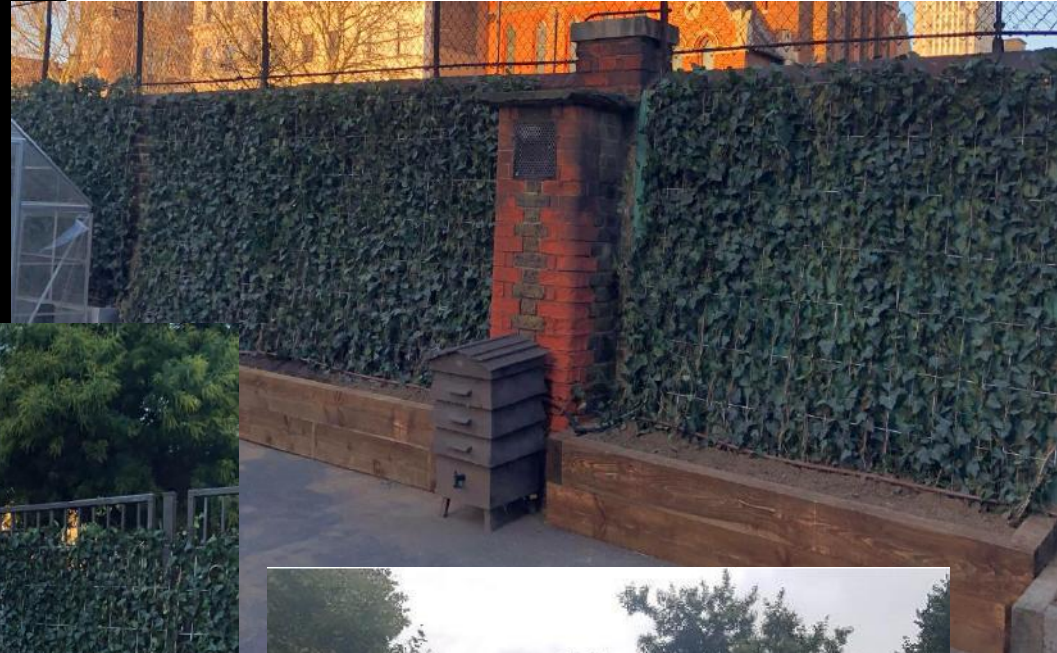
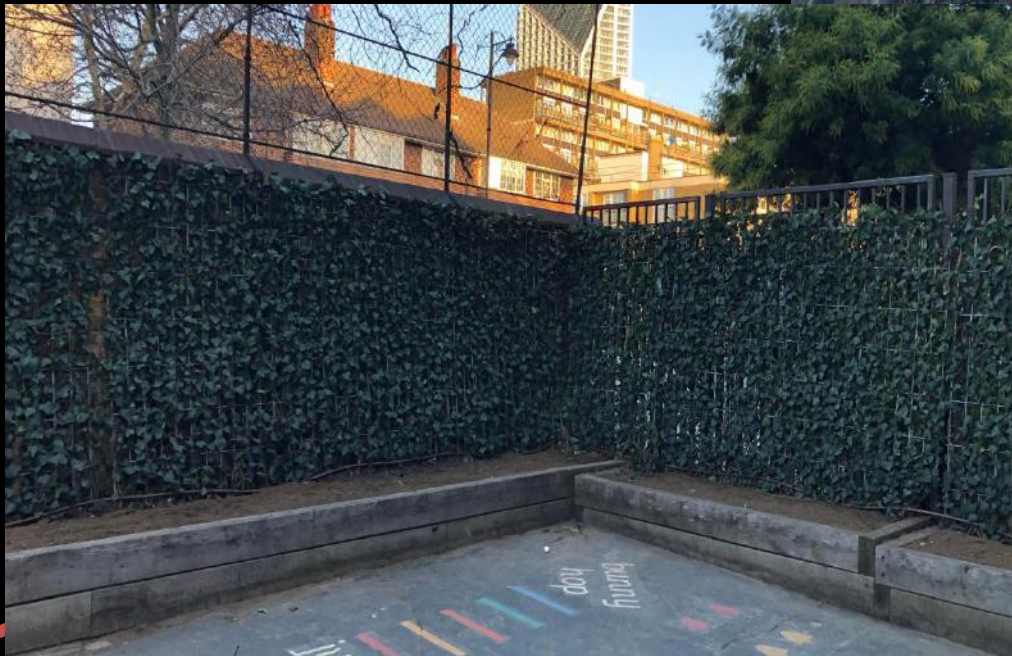








# Green Screen





Aim:

Reduce concerns over lung growth.

Decrease in the mean daily pollution concentrations.

25 - 40% Reduction in nitrogen dioxide



# Green Infrastructure







Miscanthus sinensis zebrinus



Trachelospermum jasminoides



Olea europea



Pittosporum tenuifolium garnettii



Agapanthus headbourne Hybrids



Gaura lindheimeri whirling butterfly



Mahonia soft caress



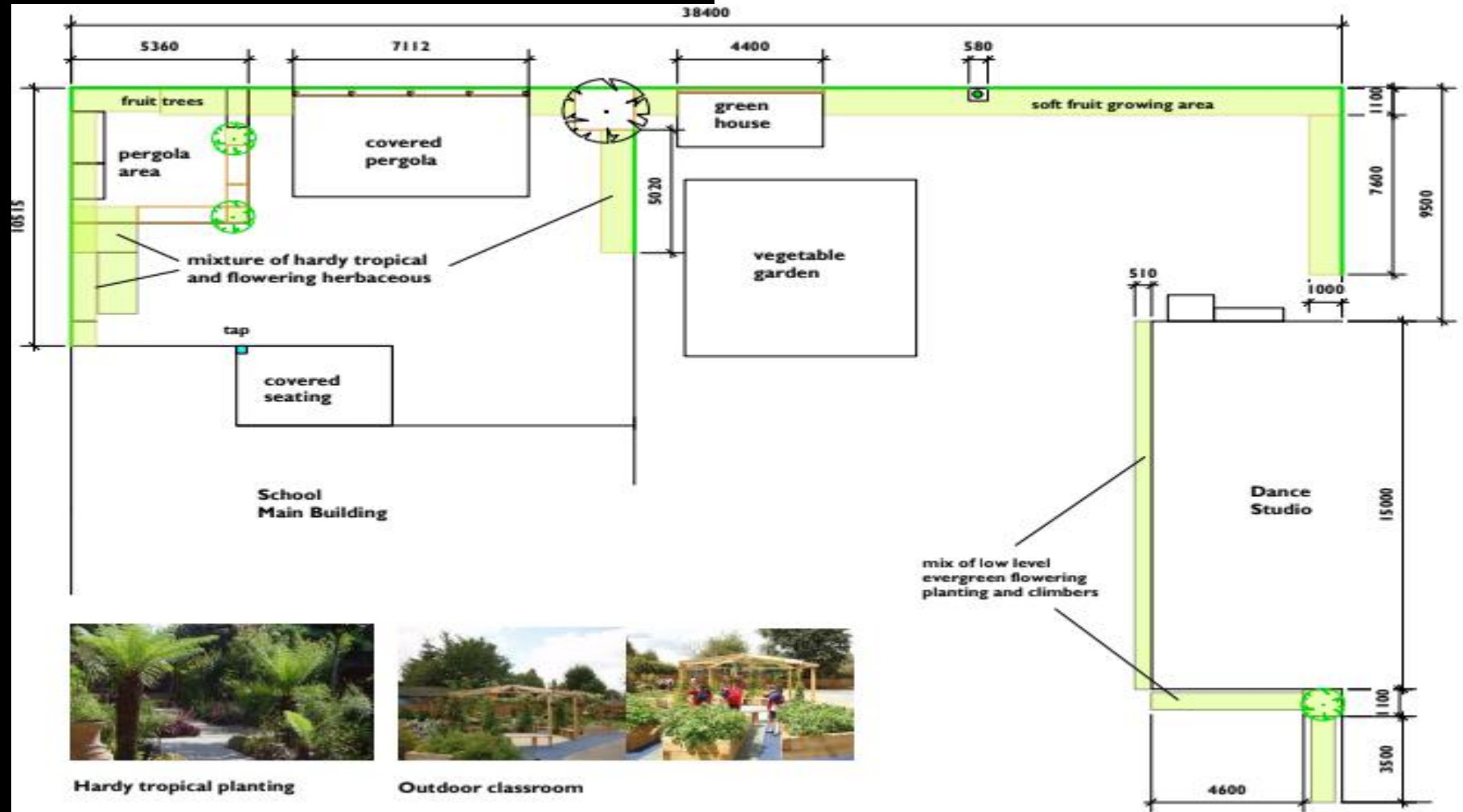
Muehlenbeckia axillaris



Teucrium fruticans



Vinca minor atropurpurea



# Change in Attitudes





# Scooting and Cycling to School



Increased by 80% in  
two years.



# London wide Monitoring

## AQMesh Air Quality Monitoring Pods

### Installation Requirements & Considerations



AQMesh pods are supplied in two main power configurations.

1. Mains electricity powered via a small plug in transformer which delivers 12v DC power to the pod via a weatherproof connector.
2. A 25watt solar panel which charges a 12v DC battery which in turn delivers to the power to the pod via the same weatherproof connector.





## GLA's School Air Quality Forum - Online Platform



## Greater London Authority's School Air Quality Forum – Online Platform

Aims to connect the 50 audited Schools and their associated boroughs by enabling them to share their experiences as part of the programme.

### Layout:

- Welcome
- About
- Programme Updates
  - The Mayor's School Air Quality Audit Programme
  - The Mayor's Nurseries Air Quality Audit Programme
  - Air Filtration Trials
- Forums
- Materials
  - Air Quality Audit Toolkit
  - Master report



### Programme Updates

Here you can find the latest updates on both the School and Nurseries Air Quality Audit Programmes.

#### The Mayor's School Air Quality Audit Programme

Currently 45 Schools out of the 50 have, or are in the process of, receiving their £10k Starter Grant Funding.

Additionally:

- All Project Plans have been received – these state how the Starter Grant funding will be used; and
- 44 Implementation Plans have been received – these indicate the additional

#### FORUMS

- Air Filtration
- Cycling and Scooter Measures
- General Questions
- Green Infrastructure
- Healthy/ School Streets
- STARS Programme
- TfL

**The Greater London  
Authority's School Air Quality  
Forum Event**

## Forum Discussions – How to Get Involved

### Forums

Below are a number of forums intended to enable knowledge sharing and the discussion of ideas and issues. To participate, you will need to login.

Welcome > Forums

Search

Forum	Topics	Posts	Freshness
<a href="#">Air Filtration</a>	0	0	No Topics
<a href="#">Cycling and Scooter Measures</a>	0	0	No Topics
<a href="#">General Questions</a>	0	0	No Topics
<a href="#">Green Infrastructure</a>	0	0	No Topics
<a href="#">Healthy/ School Streets</a>	0	0	No Topics
<a href="#">STARS Programme</a>	0	0	No Topics
<a href="#">TfL</a>	0	0	No Topics

#### FORUM LOGIN

Username:

Password:

☐ Remember Me

[Register](#)

[Lost Password](#)

Prove your  
humanity

8 + 9 =

Log In

## Forum Discussions – How to Get Involved

### Register

Your username must be unique, and cannot be changed later.  
We use your email address to email you a secure password and verify your account.

Username:

Email:

- Once you have registered you will be able to post topics on the forums (see right).
- The forums that are currently running are:
  - Air Filtration
  - Green Infrastructure
  - Cycling and Scooter Measures
  - TfL
  - STARS
  - Healthy/ School Streets
  - General Questions
- Please let me know if you have any further suggestions

The screenshot shows the 'Air Filtration' forum page. At the top, there is a navigation bar with links: WELCOME / ABOUT / PROGRAMME UPDATES / FORUMS / MATERIALS. The forum title 'Air Filtration' is prominently displayed. Below the title, a message states 'This forum is empty.' and another message says 'Oh bother! No topics were found here!'. On the right side, there is a 'FORUM LOGIN' section with a 'facoull' logo and a 'Log Out' link. The main content area is titled 'Create New Topic in 'Air Filtration'' and includes a message: 'Your account has the ability to post unrestricted HTML content.' Below this, there is a form to create a new topic. The 'Topic Title' field is labeled 'Filtration Systems'. The 'Topic Tags' field contains 'AFS Suppliers'. The 'Topic Type' is set to 'Normal' and the 'Topic Status' is set to 'Open'. There is a checkbox for 'Notify me of follow-up replies via email'. The form ends with a 'Submit' button. The text area for the topic content contains the following text: 'Hi, Has anyone used any Air Filtration systems as part of the programme? I'm not sure which one to buy?'



## Accessing and Sharing Materials

- There is a section on the platform for sharing materials.
  - Air Quality Audit Toolkit
  - Master report
- If you would like to share something you will first need to fill out the associated form.
- If the request is approved you will then receive an email asking you to share the material in PDF format.
- This will then be uploaded by the administrator.

### Materials

There are a number of materials available that are designed to help schools and nurseries improve air pollution. The school audit toolkit is a great place to start and can be found here:

[Air Quality Audit Toolkit](#) [Download](#)

Additionally, if you would like more information on the Mayor's School Air Quality Audit Programme, please see the below Master Report.

[Master Project Report](#) [Download](#)

Do you have any materials that you think would be helpful and would like to share? Please fill out the following form:

**Name** (required)

**Email** (required)

**Organisation** (required)

Message - please provide a description of the material(s) you would like to share (required)

Submit

Search ... [SEARCH](#)

#### FORUMS

- [Air Filtration](#)
- [Cycling and Scooter Measures](#)
- [General Questions](#)
- [Green Infrastructure](#)
- [Healthy/ School Streets](#)
- [STARS Programme](#)
- [TfL](#)

**The Greater London  
Authority's School Air Quality  
Forum Event**  
22nd March 2019

8

days to go.

## Greater London Authority's School Air Quality Forum – Online Platform

The link to the Greater London Authority's School Air Quality Forum Online Platform will be circulated along with the meeting notes following this event:

<https://schoolairqualityforum.com/>

Please feel free to start trailing and using the site. There will be an opportunity for feedback in relation to the online platform at the next forum event.



Thank You